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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,489	12/10/2003	Yaron Ilan	59046.000042	7678

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EXAMINER	
LE, EMILY M	

ART UNIT	PAPER NUMBER
1648	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,489	ILAN ET AL.	
	Examiner	Art Unit	
	Emily Le	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05/29/07 and 07/11/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12,15-17,20-24,63 and 64* is/are pending in the application.

4a) Of the above claim(s) *21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12, 15-17, 20, 22-24 and 63-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/29/2007 has been entered.

Status of Claims

2. Claims 1-11, 13-14, 18-19 and 25-62 are cancelled. Claims 12, 15-17, 20-24 and 63-64 are pending. Claim 21 is withdrawn for being directed to a non-elected invention, which is HCV. Claims 12, 15-17, 20, 22-24 and 63-64 are under examination.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 12, 15-17, 20, 22-24 and 63-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are directed to a process for treating a disease in a mammalian subject comprising the administration of a glycolipid to a subject, wherein the elected disease is a viral infection, specifically HCV infection.

The courts have described the essential question to be addressed in a description requirement issue in a variety of ways. An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Under Vas- Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." Ralston Purina Co. v. Far-Mar-Co., Inc., 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting In re Kaslow, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). Whenever the issue arises, the fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. See, e.g., Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). An applicant shows possession of the claimed invention by describing

the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997). **Possession may be shown in a variety of ways including description of an actual reduction to practice, or by showing that the invention was "ready for patenting" such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention.** See, e.g., Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 68, 119 S.Ct. 304, 312, 48 USPQ2d 1641, 1647 (1998); Regents of the University of California v. Eli Lilly, 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997); Amgen, Inc. v. Chugai Pharmaceutical, 927 F.2d 1200, 1206, 18 USPQ2d 1016, 1021 (Fed. Cir. 1991) (one must define a compound by "whatever characteristics sufficiently distinguish it"). See MPEP § 2163 for examination guidelines pertaining to the written description requirement.

The specification suggests the use of glycolipids to modulate the immune system to treat HCV infection. However, the specification does not contain a description of actual reduction to practice that glycolipids are effective in treating HCV infection. Nor has Applicant shown that the invention was "ready for patenting" by disclosing drawings demonstrating that glycolipids are effective in treating HCV infection. Nor has Applicant provided any distinguishing characteristics regarding the effective use of glycolipds to treat HCV infection. In the instant case, all that is provided in the specification is a

suggestion of use based on an association study. In the study, via various assays, Applicant observed that that the immune profile of subjects infected with HCV differs if the subjects are diagnosed with Gaucher's disease, where there is a buildup of glucosylcerebroside (glycolipid) due to the decreased capacity for breakdown of this product. Through this association, Applicant suggests the administration of glycolipids to achieve one change in an immune component in a subject infected with HCV, to treat the subject of HCV infection. [Paragraph bridging pages 12-13, in particular.] However, Applicant has not performed any research or investigation to determine which immune component has to be changed via the administration of glycolipids to treat HCV. Nor has Applicant performed any study showing that the administration of glycolipids is indeed effective in treating HCV. In the instant case, the specification is devoid of any evidence relating to the effective use of glycolipds to treat HCV infection. Applicant has not reasonably conveyed to the skilled artisan that Applicant is in possession of the claimed invention; at the time it was filed, via any distinguishing characteristics. Applicant has not even characterized the effect of glycolipids in subjects that are infected with HCV. All Applicant has provided are immune profiles that associate HCV with Gaucher's disease. Beyond that association, Applicant has not done any addition research to reasonably convey to the skilled artisan that glycolipids are effective in treating HCV infection. Furthermore, in accordance with Applicant's reasoning, HCV infection in subjects diagnosed with Guacher's disease, which have a vast reservoir of glycolipids due to the decreased capacity to breakdown this product, would have readily resolved itself; however, it should be noted that this is scenario is not readily found in

Applicant's specification. Overall, the instant specification does not reasonably convey to the artisan that the inventor had possession at that time of the later claimed subject matter. Hence, the claims are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

5. Claims 12, 15-17, 20, 22-24 and 63-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. In Genentech *Inc. v. Novo Nordisk* 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997); *In re Wright* 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); See also *Amgen Inc. v. Chugai Pharm. Co.,* 927 F.2d 1200, 1212, 18 USPQ2d 1016, 1026 (Fed. Cir. 1991); *In re Fisher* 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Further, in *In re Wands* 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) the court stated:

> Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in *Ex parte Forman* [230 USPQ 546, 547 (Bd Pat App Int 1986)]. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Nature of the invention:

The claimed invention is directed at the treatment of diseases, wherein the elected disease is hepatitis C virus, HCV, with the administration of a glycolipid. As noted by Applicant, the claimed invention relates to the application of glycolipid to regulate and manipulate immune responses, Th1 and Th2 responses, in mammalian subjects to treat mammalian subjects of an infection, particularly wherein the elected infection is hepatitis C virus. [First paragraph, Field of the invention, page 1 of specification.]

Breadth of the claims:

The claims encompass all diseases, wherein the elected disease is hepatitis C virus; all mammalian subjects, and glycolipids.

Presence or absence of working examples and Amount of direction or guidance presented:

The specification does not contain any working examples demonstrating the effective use of glycolipids to treat HCV infection. All that is present in the specification is an association study, which demonstrates that HCV infected subjects have a different immune profile if they are also diagnosed with Guacher's disease, compared to those that are not diagnosed with Guacher's disease, where there is a buildup of glucosylcerebroside (glycolipid) due to the decreased capacity for breakdown of this product. Through this association study, Applicant suggests the administration of glycolipds to treat HCV infection by modulating a change in at least one immune component. [Paragraph bridging pages 12-13, in particular.] However, Applicant has not

set forth any guidance or direction relating to the immune component that must be changed or modulated in order to render treatment to HCV infected subjects. What is the immune component that must be modulated or changed? Is it a Th1 or Th2 immune response that must be induced? What kind of Th1 or Th2 induced cytokines must be produced in order to effective treat HCV? Is this modulation or change is directed at increasing or decreasing the activity of this particular immune component? And are glycolipids capable of rendering this change or modulation? In the instant case, beyond the speculative use of glycolipids to treat HCV, Applicant has not provided any additional information or evidence regarding the effective use of glycolipids to treat HCV infection.

State of the prior art:

The hepatitis C virus (HCV) art clearly notes that the role of innate and antigen-nonspecific immune response to HCV has not yet been sufficiently characterized.[1] In the absence of a sufficient characterization of the role of innate and antigen-nonspecific immune responses to HCV, the skilled artisan would not readily be able to practice the claimed invention without an undue burden of experimentation. In the absence of such characterization, the burden is on the skilled artisan to mine the field to determine significance of the innate and antigen-nonspecific in HCV treatment. The art additionally acknowledges several factors that challenge the development of an effective treatment for HCV.[2, 3, 4]

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[1] Knipe DM, Howley PM, eds. Fields virology. 4th ed. Vol. 1. Philadelphia: Lippincott Williams & Wilkins, 2001, 1004-1016 and 1127-1161.
[2] Hahn. Subversion of immune responses by hepatitis C virus: immunomodulatory strategies beyond evasion? Current opinion in Immunology, 2003, Vol. 15, 443-449.

The first factor is the lack of an effective cell culture system for HCV. In the absence of an effective cell culture system for HCV, the skilled artisan would be at an automatic disadvantage when it comes researching the effects of innate or antigen-nonspecific immune responses in HCV treatment. The second challenge is the absence of good animal models for HCV, outside of humans and chimpanzees. In the instant case, the noted disadvantage that the skilled artisan would face in practicing the claimed invention is further compound by the noted absence of good animal models for HCV. Combined, in the absence of an effective in vitro and in vivo model for conduct HCV research, a prima facie case of undue experimentation and unpredictability is established. The other challenge is the ability of HCV to evade effective immune recognition, including recognition by cytotoxic T lymphocytes (CTL), and shows an extremely high rate of viral persistence. In the instant case, it should be noted that Applicant has not taught the skilled artisan how to deal or address each of the challenges addressed herein. This last point further establishes that the type of experimentation that the skilled artisan would have to perform in practicing the claimed invention is beyond routine experimentation, such as establishing route of administration and treatment dosage amounts. The imposition of experimentations that is beyond routine experimentation would unduly burden the skilled artisan practicing the claimed invention.

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[3] Knipe DM, Howley PM, eds. Fields virology. 4th ed. Vol. 1. Philadelphia: Lippincott Williams & Wilkins, 2001, 1004-1016 and 1127-1161.

[4] De Francesco et al. Challenges and successes in developing new therapies of hepatitis C. Nature, 2005, Vol. 436, 953-960.

Quantity of experimentation necessary:

The skilled artisan cannot rely on the disclosure set forth in the specification to reasonably practice the invention without the burden of undue experimentation. In order for the skilled artisan to successfully practice the claimed invention, the skilled artisan would have to blindly and unduly experiment with glycolipids, each immune component, and determine the relationship among the glycolipids, each immune components and HCV infection.

In all, the skilled artisan practicing the claimed invention would have to bridge the gap between the glycolipids and HCV infection, the gap that should have been substantially filled by Applicant, at the time the invention was filed. In the instant case, the attainment of such knowledge would undeniably be an undoubtedly laborious task that includes both blind and undue experimentations. And the imposition of both blind and undue experimentations would unarguably be an undue burden for the skilled artisan.

A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification at the time the application was filed, would not have taught one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation. In re Wright, 999 F. 2d 1557, 1562, 27 USPQ 2d 1510, 1513 (Fed. Cir. 1993).

Conclusion

6. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Le whose telephone number is (571) 272 0903. The examiner can normally be reached on Monday - Friday, 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce R. Campell can be reached on (571) 272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Emily M. Le/
Patent Examiner
Art Unit 1648

/E.Le/